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Observations of the Eclipse of the Sun, 1874, April 16, at the Royal Observatory, Cape of Good Hope.

Observer.	Instrument.	Power employed.	Cape Mean Time. First contact. h m s	Cape Mean Time. Last contact h m s
Mr. Finlay	8½-feet Equatoreal	200	2 38 0·5	4 55 37·7
„ Maclear	46-inch „	90	2 38 8·3	...
„ Stevens	Common telescope	60	2 38 6·5	4 55 39·3
„ Freeman	Comet-seeker	15	2 38 32·5	4 55 37·2
„ Black	Seaman's glass	25	2 38 30·3	4 55 40·5
„ Lowrie	Eye	...	2 39 0·3	4 55 27·8
„ Shoobin, (A Russian officer attached to H.I.M.S. "Vsadnix," then in Table Bay.)	Theodolite	20	2 38 20·6	4 55 12·2

Mr. Black considers his first contact quite 10 seconds late.

Discovery of Minor Planet (143).

M. Palisa discovered at Pola, on the evening of February 23, another member of the group of minor planets. It was also observed at Berlin on the following evening. The positions determined from these first observations are as follow:—

			Mean Time at place of observation. h m s	R.A. h m s	N.P.D. ° ′ ″
Pola	1875	Feb. 23	8 42 0	3 57 56	76 14 0
Berlin	„	„ 24	8 27 14	3 56 57·7	76 13 20

The planet was of the twelfth magnitude.

On the Application of Corrections for Change of Temperature to the Rates of Chronometers at Sea. By Mr. Hartnup.

The *Monthly Notices* for December, 1874, contains a letter from Mr. A. E. Nevins, an officer of the ship "Tenasserim," on the performance of two chronometers during a voyage from Liverpool to Calcutta. From some oversight the name of Mr. Nevins does not appear in that letter. On the return voyage of the "Tenasserim" from Calcutta to London, the chronometers were compared with each other, and the temperature taken daily in the same way as on the voyage out; and through the courtesy of Captain Potts, Mr. Nevins has been able to supply me with

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a continuation of his calculations: so that we now have the difference of Greenwich Mean Time between the two chronometers by calculation and by comparison with each other for every fifth day—with two or three unimportant exceptions—during a period of eight months.

It must not be assumed that the two chronometers of the "Tenasserim" are inferior instruments, or that they are more imperfect than usual in thermal adjustment; on the contrary, they are much better instruments, and more perfect in thermal adjustment than the average of those we meet with in the Merchant Navy. This being the case, it is difficult to conceive how a greater improvement could be made in the use of the chronometer at sea than that of adopting a variable rate dependent on the temperature, instead of one uniform rate throughout a long voyage in variable climates. In an observatory furnished with the necessary means there is no difficulty in supplying the rates for the temperatures between 50° and 95°; and as it appears to be the practice at sea to compare chronometers with each other daily, surely the mariner, if supplied with the means, might be induced to take the rates corresponding to the temperatures from a record similar to the following, which was used on the voyage of the "Tenasserim" from Calcutta to London:—

Table of Rates for every 5° of Temperature.

Chronometer	50° s	55° s	60° s	65° s	70° s	75° s	80° s	85° s	90° s	95° s
No. 209	−1·8	−1·2	−0·6	−0·1	+0·4	+0·9	+1·3	+1·7	+2·1	+2.4
No. 713	−1·3	−0·8	−0·5	−0·4	−0·4	−0·6	−0·9	−1·4	−2·1	−3·0

By taking the rates from the above table the calculated difference between the two chronometers differed from the observed by only $1^m\ 18^s{\cdot}5$ after a voyage of eight months; but by using the rates as found in Liverpool in 55°, the difference between observation and calculation amounted to $10^m\ 16^s{\cdot}0$, as shown in the accompanying table.

The following were the errors of the two chronometers when the ship arrived in London:—

	No. 209. h m s		No. 713. h m s	
From G. M. T., obtained in London .	Fast	0 2 3·0	Slow	0 36 20·0
By calculation from rates corrected for change of Temperature . . .	,,	0 1 58·0	,,	0 35 6·5
Differences, or errors of Longitude by Chronometers	,,	0 0 5·0	,,	0 1 13·5

The following continuation of Mr. Nevins' Table exhibits the difference of Greenwich Mean Time between the two chronometers as obtained from calculation and comparison with each other during the voyage from Calcutta to London.

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Date. 1874	Errors on G.M.T., from calculations with rates corrected for change of Temperature. No. 209.	No. 713.	Difference between the two Chronometers from Calculation.	Comparison with each other.	Difference of G.M.T. between the two Chronometers from rates Corrected for change of Temperature.	Uncorrected for change of Temperature.	Mean Temperature Fahrenheit.
	m s	m s	m s	m s	m s	m s	°
May 31	+0 28·5	−33 21·0	33 49·5	33 51·5	0 2·0	4 52·5	88
June 3	+0 35·1	−33 27·9	34 3·0	34 0·0	0 3·0	5 2·2	91
7	+0 42·7	−33 35·1	34 17·8	34 10·5	0 7·3	5 14·3	88
11	+0 50·3	−33 41·9	34 32·2	34 23·5	0 8·7	5 28·9	87
18	+1 2·2	−33 51·7	34 53·9	34 48·0	0 5·9	5 56·2	85
25	+1 13·4	−34 0·8	35 14·2	35 16·5	0 2·3	6 27·5	84
30	+1 20·9	−34 6·3	35 27·2	35 39·0	0 11·8	6 52·0	82
July 5	+1 28·0	−34 11·4	35 39·4	35 59·5	0 20·1	7 14·5	81
10	+1 35·0	−34 16·5	35 51·5	36 19·5	0 28·0	7 36·5	81
15	+1 41·0	−34 20·5	36 1·5	36 38·5	0 37·0	7 57·5	79
20	+1 44·5	−34 23·0	36 7·5	36 54·5	0 47·0	8 15·5	73
25	+1 46·0	−34 25·0	36 11·0	37 6·0	0 55·0	8 29·0	69
30	+1 46·5	−34 27·0	36 13·5	37 13·0	0 59·5	8 38·0	67
Aug. 4	+1 45·5	−34 29·0	36 14·5	37 17·5	1 3·0	8 44·5	64
9	+1 46·0	−34 31·0	36 17·0	37 22·0	1 5·0	8 51·0	67
14	+1 42·5	−34 34·0	36 16·5	37 21·0	1 4·5	8 52·0	59
19	+1 38·5	−34 37·0	36 15·5	37 18·0	1 2·5	8 51·0	58
24	+1 37·5	−34 39·0	36 16·5	37 17·0	1 0·5	8 52·0	64
29	+1 38·0	−34 41·0	36 19·0	37 19·0	1 0·0	8 56·0	67
Sept. 3	+1 41·5	−34 43·5	36 25·0	37 24·5	0 59·5	9 3·5	73
8	+1 46·5	−34 47·0	36 33·5	37 34·0	1 0·5	9 15·0	76
13	+1 53·0	−34 51·5	36 44·5	37 46·5	1 2·0	9 29·5	80
18	+1 58·5	−34 55·5	36 54·0	38 1·0	1 7·0	9 46·0	78
23	+2 2·5	−34 58·0	37 0·5	38 13·0	1 12·5	10 0·0	74
28	+2 6·5	−35 0·5	37 7·0	38 23·0	1 16·0	10 12·0	74
Oct. 3	+2 3·5	−35 3·0	37 6·5	...	...	...	60
8	+1 58·0	−35 6·5	37 4·5	38 23·0	1 18·5	10 16·0	56

For the preceding errors and rates—

The sign + indicates fast, or gaining.
The sign − indicates slow, or loosing.

ERRATA.

Monthly Notices—December 1874.

P. 79, in 55°, 70°, 85°, *r r' r''* should be in seconds of time.
,, 81, line 2--for *ratio* read *rates*.
,, ,, under Table of Rates---for 95° read 92°.

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